(4) Tall plants (such as Sarracenias) or ones with easily broken traps or leaves will ship best if sent with strong pieces of cardboard wrapped about them as reinforcement. The exact method of reinforcement is left up the shipper, but a few moments of thought will reveal the possibilites are unlimited. Attach the wrapped specimen to a piece of flat cardboard; or fold cardboard into a protective sheath for tall pitchers. A stick from the branch of a tree can even be used. Added protection is easily obtained by wrapping the reinforced specimen in newspaper.

(5) Always label each specimen bag, on the outside please. Make sure the label is legible and not smeared by damp fingers. Refrain from placing more than one species in the same specimen bag.

(6) Pack the box. Try to arrange the specimens in such a manner as to reinforce the cardboard box. Open, unused spaces should be filled with crushed newspaper or a substitute cushioning medium. The packed carton should feel solid.

(7) It is always appreciated if a short note or letter is included with the specimens telling what specimens have been enclosed, where they came from, or any special instructions as to their care. Such a note will make the package more enjoyable and personal.

(8) Wrap the box. Use strong wrapping paper, freezer paper (dull side out), or if the box is small enough, you can use a paper grocery bag. Wrap the paper tightly, securing the folds with plenty of strong tape. Don't be stingy with your tape. Then tie thick string or twine about the carton tightly. Attach or print on the address labels, and it is ready to ship.

(9) Select the carrier: (a) Use AIRMAL or AIR PARCEL POST for all packages sent outside the U.S. When sending plants to another country, check with the recipient as to whether special permits or procedures are necessary. Customs forms are available at the Post Office. (b) AIRMAIL delivery within the U.S. takes the same time for delivery as First Class, and is expensive. United Parcel Service (UPS) is the least expensive and generally takes only three days for delivery. Air Parcel Post is a relatively inexpensive intermediate.

(10) A few cautions: (a) Try to ship packages early in the week to prevent them from sitting dormant over the weekend. (b) Avoid mailing packages during peak holiday rush periods, such as New Year's, Christmas, etc. (c) Never send small plants or cuttings by placing them in an envelope used for mailing. They are not in the least bit protected from crushing, and probably won't survive. Bubble plastic will afford some protection when envelopes are used, but crushing still occurs. Instead, use a small box.

I was told once that it is too time consuming and bothersome to go through all the above trouble each time you send a plant to someone. What is the use in sending your rare plants if they are killed in transit because you were too lazy to take the precautions against their damage!

FEEDING CARNIVOROUS AQUATICS

by T. W. Brokenbro

1. UTRICULARIA -- Many CPNers find much difficulty in obtaining as well as keeping food for aquatic Utricularia (and their close allies Biovularia and Polypompholyx), so the following may be of interest. One food which Utrics readily accept is Daphnia and Cyclops which are easily bred with a little care. First, a culture must be started by placing crushed lettuce leaves and chicken or rabbit manure in a container, such as a bucket, in which there is rain water. This is then stood in strong sunlight and fresh air; the manure and lettuce are removed after two weeks. Fresh air is vital as spores of the infusoria which have dried by the side of some pond will settle into the bucket, in which the Daphnia will eventually feed.

This first process can be speeded up by first boiling the manure/lettuce mixture which is then allowed to cool and age for two or three days. The infusoria culture can then be added by obtaining a half pint of pond water or lake water. (I will exchange CP for a start of the culture if any CPNer wants any.) The bucket must now be given ample sunlight for the infusoria to breed correctly. I would not use bog water since it is too acid to yield a high culture content. This should take a matter of several days when the culture should turn a medium green color and the bottom of the bucket becomes slightly hazy. To check this, just take a drop and place it under a low power microscope and you should see it teeming with freshwater plankton. A visit to the local pet shop will secure your Daphnia and Cyclops although you can obtain them from a pond where there are many species of varying sizes suitable for different sized bladders of Utricularias.

A continuous culture is maintained and this is added to the present bucket as the water level goes down due to normal evaporation. Then as fall approaches, the Daphnia will appear to die off, yet there is no cause for alarm as males will be appearing (females appear only in spring and summer). They mate with the available females producing eggs. These hatch again during spring as heat and light increase thus repeating the process once more.

2. ALDROVANDA -- Young guppies can be bred for this genus by placing adult fish in an aquarium in a ratio of one male to three females. As the fish are live bearers, the new young editions can be prevented from being eaten by their parents by the installation of a breeding trap, from which the young fry can be removed as required to be placed in the Aldrovanda tank. However, don't be tempted to place too many fry into the tank at once as at a certain age they will be able to attack and eat the very plant you are trying to feed. The above can be used successfully with the Utric species which have large bladders. If one can maintain a minimum temperature of 24° C., guppies can also be bred throughout the year supplying a much needed food source when many others are scarce. Also try Brine shrimp which can be obtained in egg form from your local aquarists shop.

3. GENLISEA -- The infusoria culture is ideal for this small plant. Try adding a few drops to its growing medium every so often.

4. ZOOPHAGUS -- The tiny animal called Rotatoria on which this plant particularly feeds should easily be found in pond water after examination under a microscope.

5. ENDOCAHLEUS -- This fungus lives by attacking amoeba which it eventually kills. A regular supply of amoeba can be obtained by scooping up a small quantity of the bottom mud of a pond in a wide-necked bottle. If any amoeba are present in this mixture, they will after several days show up as minute gray dots (only just seen by the naked eye) on glass slides. As these one-celled animals live on such life as diatoms and minute green algae, a pond known to be rich in these can supply an ideal food source to breed the creature.

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DIGESTION PROCESS OF DIONAEA MUSCIPULA AS ANALYZED WITH KIRLIAN PHOTOGRAPHY

by William C. Leikam and Don S. McNeil

Kirlian photography involves the contact exposure of an object with high voltage, not lenses and light. The result is a visible flaring emission pattern extending from the object across the film. This pattern changes in consistent ways as internal changes within the object occur. Such changes might be the emotional state of a person, or the physical condition of a plant, i.e., its state of health. This flare pattern is known by researchers such as Dr. Thelma Moss of U.C.L.A. as the corona.

It was upon this basis of consistent change in the corona that we wondered what changes might become evident upon comparing a series of Kirlian photographs in Dionaea as it proceeded through the digestive process. If we could perceive these concrete changes we surmised that we could then "see" the energy transformations which accompany the digestive function and, therefore, possibly learn something about the digestive cycle. From this information we could then draw several very tentative conclusions about the varying expenditures of energy created and used by the plant, thus allowing us to "see" where peak energy was being produced by the trap in order to further digestion.

DISCUSSION

During our search we ran a double series. Figures 2 and 3 are from series B while figures 1 and 4 are from series A. Each photograph was taken at 24 hour intervals save for figures 1 and 2. Although the photographs actually shown here are from two series, they accurately reflect what was found in each independent sampling.

Thus, figure 1 shows an open trap which was empty but was triggered and closed while in the high voltage field. This figure is used as our baseline for comparison with all successive photographs. Note that the corona in figure 1 is rather mottled through the central region of the trap with a weak corona extending outward on the perimeter. This is characteristic of the energy level, as shown by the corona, while the trap closes without the presence of an insect. Figure 2, however, shows the series B trap within two minutes of closure on a severed common meal worm. Here there is a sudden "exploding"of the corona, but note also that this does not occur evenly about the trap. This unevenness indicates that the greatest flow of energy within the trap region is not evenly distributed, thus possibly suggesting that certain parts of the trap are, at the outset, more immediately and actively involved in both the closure and initial digestive stages than are other areas of the trap and/or that the trap here is seen adjusting to internal stress